Express Mail Label No. EL 565140456 US
Docket No: S1022.81242US00
Mailed May 13, 2005

Amendments to the Written Description of the Specification

Applicant presents replacement paragraphs below indicating the changes with insertions indicated by underlining and deletions indicated by strikeouts and/or double bracketing.

On page 1, after the title insert: --Background Of The Invention--;

On page 1, after "Background of the Invention" but before the first paragraph insert -- Field of the Invention--;

Please amend the first paragraph on page 1, lines as shown below:

--The present invention relates to the testing of microprocessors. It more specifically relates to a method and device ~~of~~ for digital data transmission between a monitoring circuit integrated in a microprocessor chip and an analysis tool.--

On page 1, before the second paragraph beginning on line 10, insert --Discussion of the Related Art--;

Please amend paragraphs 2-4, beginning on page 1, line 5 through page 2, line 2 as shown below:

--Fig. 1 schematically shows an integrated circuit 10 comprising a microprocessor (μP) 12, an internal memory (MEM) 14, and input/output terminals (I/O) 16. Microprocessor 12 is intended to execute a program or [[a]] software stored in memory 14. Under control of the program, microprocessor 12 may process data provided by input/output terminals 16 or stored in memory 14 and read or write data through input/output terminals 16.

To check the proper operation of the microprocessor, a monitoring circuit 18 (TEST) is generally integrated ~~to~~ on integrated circuit 10. Monitoring circuit 18 is capable of reading specific data provided by microprocessor 12 on execution of a program, and of possibly processing the read data. Monitoring terminals 22 connect monitoring circuit 18 to an analysis tool 24. Analysis tool 24 may process the received signals, for example, according to commands provided by a user, and ensure a detailed analysis of the operation of microprocessor 12. In particular, analysis tool 24 may determine the program instruction sequence really executed by microprocessor 12.

The number of monitoring terminals 22 for a conventional monitoring circuit 18 may be on the same order of magnitude as the number of input/output terminals 16 of

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microprocessor 12, for example, from 200 to 400. Monitoring terminals 22 as well as the connections of monitoring circuit 18 take up a significant silicon surface area, which causes an unwanted increase in the circuit cost. For this purpose, a first version of integrated circuit 10 comprising monitoring circuit 18 and monitoring terminals 22 is produced in small quantities to check out microprocessor 12. After this checking out, a version of integrated circuit 10 ~~rid of~~ without monitoring circuit 18 and ~~of~~ without monitoring terminals 22 is sold. This ~~implies the~~ requires forming of two versions of the integrated circuit, which requires a significant amount of work and is relatively expensive. Further, the final chip is not identical to the tested chip.--

Please amend the third full paragraph on page 2, lines 13-17, as shown below:

--Thus, standard IEEE-ISTO-5001, in preparation, provides in its 1999 version, accessible, for example, on website www.ieee-isto.org/Nexus5001, a specific message exchange protocol between a monitoring circuit 18 and an analysis tool 24 for a monitoring circuit 18 requiring only a reduced number of monitoring terminals 22.--

Please amend the first full paragraph on page 3, lines 7-13, as shown below:

--Standard IEEE-ISTO-5001 provides two possible identifiers for jump messages. A first identifier corresponds to a so-called "explicit" jump. An explicit jump results from ~~an~~ a direct jump instruction executed by microprocessor 12 which causes a jump to a program instruction having its address, or data representative of its address, explicitly indicated in the jump instruction. A second identifier corresponds to the other jump types, called "implicit jumps", that may occur on execution of a program by microprocessor 12.--

Please amend the first paragraph on page 5, lines 1-11, as shown below:

--When analysis tool 24 receives an implicit jump message, it cannot determine whether the implicit jump message corresponds to an indirect jump message executed by microprocessor 12 or to a jump imposed by microprocessor 12 and which is not associated with a jump instruction of the program. Indeed, in the case where the instruction of the instruction sequence reconstituted by analysis tool 24 corresponding to the message received by analysis tool 24 is not an indirect jump instruction, it is not possible ~~in sure fashion~~ to determine accurately whether the received implicit jump message corresponds to an indirect jump and whether the instruction sequence reconstituted by analysis tool 24 is incorrect, for

example shifted with respect to the instruction sequence really executed by microprocessor 12.--

On page 5, before line 12, insert --Summary of the Invention--;

Please amend the paragraph beginning on page 5, line 19 through page 6, line 3, as shown below:

--To achieve these and other objects, the present invention provides a method for transmitting digital messages, on execution of an instruction sequence by the microprocessor, through output terminals of a monitoring circuit integrated ~~to~~ on the microprocessor, at least one of said digital messages being representative of characteristic data stored by the monitoring circuit on detection of a jump in the execution of the instruction sequence from an initial instruction to a destination instruction different from the instruction following the initial instruction in the instruction sequence, the method comprising the steps of, for the transmission of a digital message, determining whether the jump is associated with a jump instruction of the instruction sequence for which data representative of the destination instruction address of the jump is explicitly indicated in the instruction; if so, assigning a first value to a first set of bits of the digital message, and if not, assigning a second value to the first set of bits; if the first set of bits is at the second value, assigning to a second set of bits of the digital message a third value identifying the jump from among several types of jumps; and transmitting the digital message.--

Please amend the five paragraphs on page 6, lines 4-24, as shown below:

--According to an ~~object~~ embodiment of the present invention, the method further comprises the step of assigning to a third set of bits of the digital message a value corresponding to the number of instructions executed by the microprocessor since the last executed instruction of the instruction sequence corresponding to a digital message associated with a jump.

According to an ~~object~~ embodiment of the present invention, the method further comprises the step of, if the first set of bits is at the second value, assigning to a fourth set of bits of the digital message a value representative of the address of the destination instruction.

According to an ~~object~~ embodiment of the present invention, a jump type corresponds to a jump resulting from a jump instruction of the instruction sequence containing the

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reference of a register in which are stored data representative of the destination instruction address.

According to an ~~object~~ embodiment of the present invention, a jump type corresponds to a jump forced by the microprocessor, the destination instruction corresponding to an instruction of a series of specific instructions which does not belong to the instruction series.

According to an ~~object~~ embodiment of the present invention, a jump type corresponds to a jump forced by the microprocessor, the destination instruction being an instruction of the instruction sequence.--

On page 7, before line 7, insert –Brief Description of the Drawings--;

On page 7, before line 17, insert --Detailed Description--;

On page 8, line 30, please insert:

--Such alterations, modifications, and improvements are intended to be part of this disclosure, and are intended to be within the spirit and the scope of the present invention. Accordingly, the foregoing description is by way of example only and is not intended to be limiting. The present invention is limited only as defined in the following claims and the equivalents thereto.

What is claimed is:--